

## ABSTRACT OF THE DISCLOSURE

In one aspect, the present invention is a technique of, and a system and sensor for measuring, inspecting, characterizing and/or evaluating optical lithographic equipment, methods, and/or materials used therewith, for example, photomasks. In one embodiment, the system, sensor and technique measures, collects and/or detects an aerial image produced or generated by the interaction between the photomask and lithographic equipment. An image sensor unit may measure, collect, sense and/or detect the aerial image in situ – that is, the aerial image at the wafer plane produced, in part, by a product-type photomask (i.e., a wafer having integrated circuits formed during the integrated circuit fabrication process) and/or by associated lithographic equipment used, or to be used, to manufacture of integrated circuits. In this way, the aerial image used, generated or produced to measure, inspect, characterize and/or evaluate the photomask is the same aerial image used, generated or produced during wafer exposure in integrated circuit manufacturing.

In another embodiment, the system, sensor and technique characterizes and/or evaluates the performance of the optical lithographic equipment, for example, the optical sub-system of such equipment. In this regard, in one embodiment, an image sensor unit measures, collects, senses and/or detects the aerial image produced or generated by the interaction between lithographic equipment and a photomask having a known, predetermined or fixed pattern (i.e., test mask). In this way, the system, sensor and technique collects, senses and/or detects the aerial image produced or generated by the test mask - lithographic equipment in order to inspect, evaluate and/or characterize the performance of the lithographic equipment.